Spruce Budworm Larval Populations

Carson and Santa Fe National Forests and Adjacent Private Land

Northern New Mexico

July 1960

By

John F. Chansler

INTRODUCTION

The biological evaluation of the spruce budworm, Choristoneura fumiferana (Clem.) involves three steps: (1) egg mass sampling; (2) larval population sampling; and (3) damage estimation. Sampling for egg mass abundance was started August 17 and completed September 11, 1959. Larval population sampling, which this report concerns, was initiated May 31 and completed June 16, 1960. Damage estimation, the third and final phase of the evaluation, is scheduled for September, 1960.

J. F. Chansler, F. M. Yasinski, and G. E. Janssen assisted in sampling the larval population. The counts were made as the larvae were attacking the buds. Unfortunately, rapid growth of the white fir and Douglas-fir buds limited the time of desirable sampling to a two to three week period. This phase of the evaluation required approximately 16 man-days.

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Owing to the time-consuming task of counting the larvae and also the limited period during which the sampling could be done, only seven plots were visited (see attached map). The plots had the same locations as those used for egg mass sampling.

Methods.

Each plot consisted of 25 trees. It was recommended in the study plan 1/ to sample only Douglas-fir, however, because of

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1/ Pierce, D. A. Biological evaluation of spruce budworm, Region 3, Work Plan, 1959.

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relatively light stocking, this was not possible to do on five of the seven plots. Furthermore, judging from the intensity of white fir defoliation, it was thought important to sample the population attacking that species. All the trees were marked and will be used in estimating defoliation.

The sampling unit for this phase of the evaluation was a 15-inch twig. Four 15-inch twigs were taken from the lower crown of each tree. A pole pruner equipped with a basket to catch the twigs was used to collect the samples.

Results.

The twigs were examined as they were cut from the tree. The number of larvae and the number of buds on each 15-inch twig were counted. Buds per twig is needed for later use in relating the defoliation to population. Pertinent data collected thus far in the 1959-60 biological evaluation are presented in Table 1.

Table 1.--Comparison of egg mass sampling and larval sampling data collected at seven different plots in northern New Mexico.

Plot	Tree species	Number trees examined	Larvae per 100 15-inch twigs	Egg masses per 1,000 sq. in. of foliage	Larvae per 1,000 buds
Carson N.F., Eastern Division and adjacent lands					
Pot Creek	W.F.	6	2,112	?	419
	D.F.	19	1,122	39	204
La Junta Canyon	W.F.	0	?	?	?
	D.F.	25	1,927	31	357
Comales Creek	W.F.	6	2,020	?	229
	D.F.	19	1,280	42	182
Carson N.F., Western Division					
Brazos Box	W.F.	12	670	5	131
	D.F.	13	444	?	87
Broke Off Mt.	W.F.	0	?	?	?
	D.F.	25	1,519	29	388
Santa Fe N.F., Western Division					
Del Norte Canyon	W.F.	11	1,422	?	371
	D.F.	14	550	16	280
San Pedro Mts.	W.F.	10	2,417	?	319
	D.F.	15	603	26	75

On the basis of this spring's larva sample it appears that high populations are currently present on the plots. However, their seriousness seem to be somewhat suppressed because of the high compliment of buds. The following damage predictions are based on larvae per 1,000 buds:

Pot Creek	Moderate
La Junta Canyon	Heavy to severe
Comales Creek	Moderate
Brazos Box	Light 2/
Broke Off Mt.	Heavy to severe
Del Norte Canyon	Moderate
San Pedro Mts.	Light

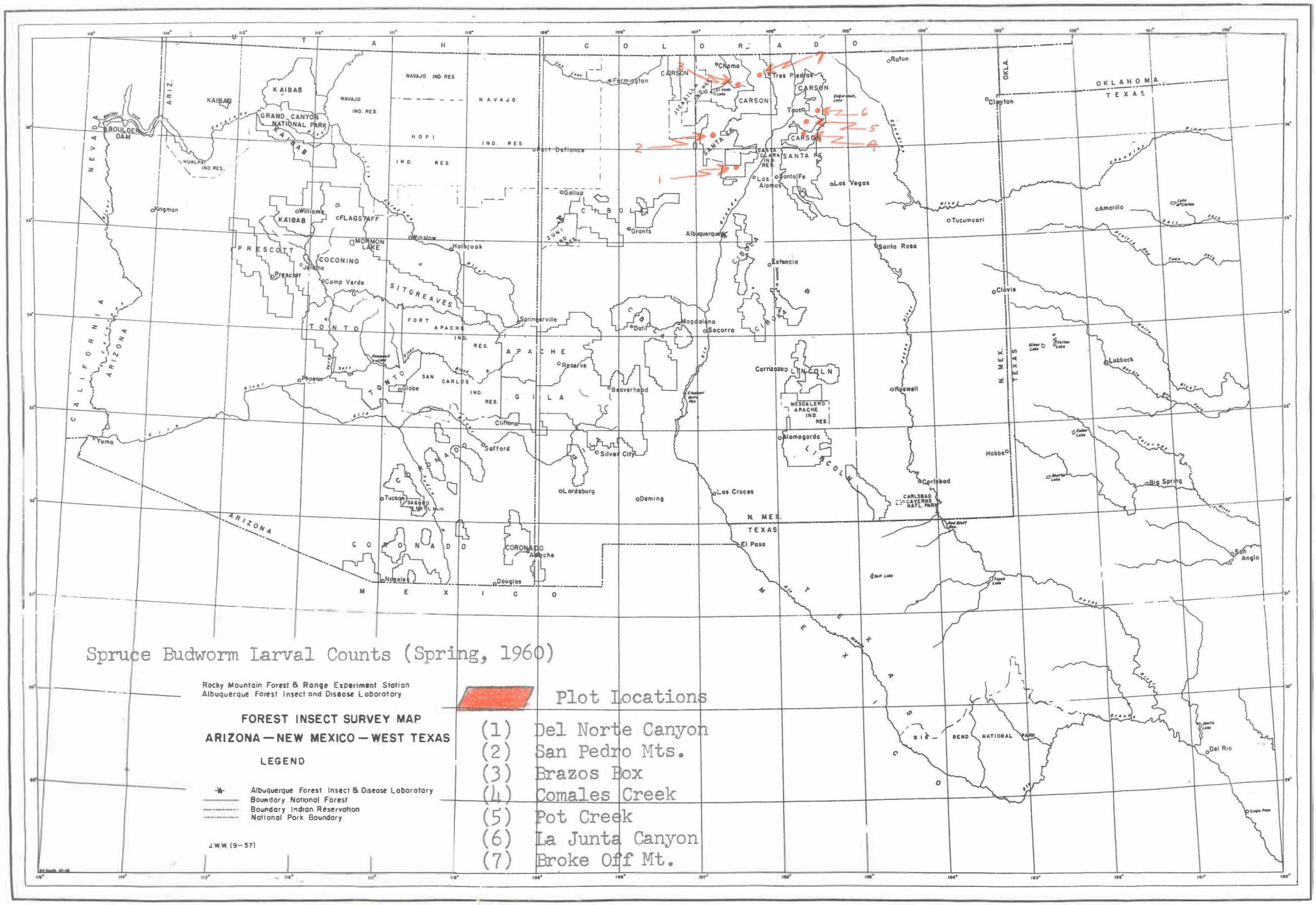
2/ Brazos Box was mapped as heavy when the aerial survey was made during the week of July 25, 1960.

Discussion.

The damage predictions are modeled from research findings in Oregon 3/. Whether or not those findings will hold true for conditions

3/ Carolin, V. M. and W. K. Coulter. 1959. Research findings relative to the biological evaluation of spruce budworm infestations in Oregon. Unpublished.

in Arizona and New Mexico is not known. Considerable time and study will be required before this evaluation scheme can be used confidently in the Southwest.


Spruce Budworm Larval Counts (Spring, 1960)
Rocky Mountain Forest & Range Experiment Station
Albuquerque Forest Insect and Disease Laboratory
FOREST INSECT SURVEY MAP
ARIZONA — NEW MEXICO — WEST TEXAS
LEGEND
Albuquerque Forest Insect & Disease Laboratory
Boundary National Forest
Boundary Indian Reservation
National Park Boundary
J.W.W. (9-57)
Plot Locations
(1) Del Norte Canyon
(2) San Pedro Mts.
(3) Brazos Box
(4) Comales Creek
(5) Pot Creek
(6) La Junta Canyon
(7) Broke Off Mt.